

# **Collusion or Illusion: A Tri-State Analysis of Gas Prices**

Presented to the city of Eau Claire  
Fiscal Advisory Committee

12/12/2012



University of Wisconsin  
**Eau Claire**

# Presenters

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Dept. of Economics
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Accounting Major from Osseo, WI
- Ben Possi – Senior, Geography and Economics  
Major from Milwaukee, WI

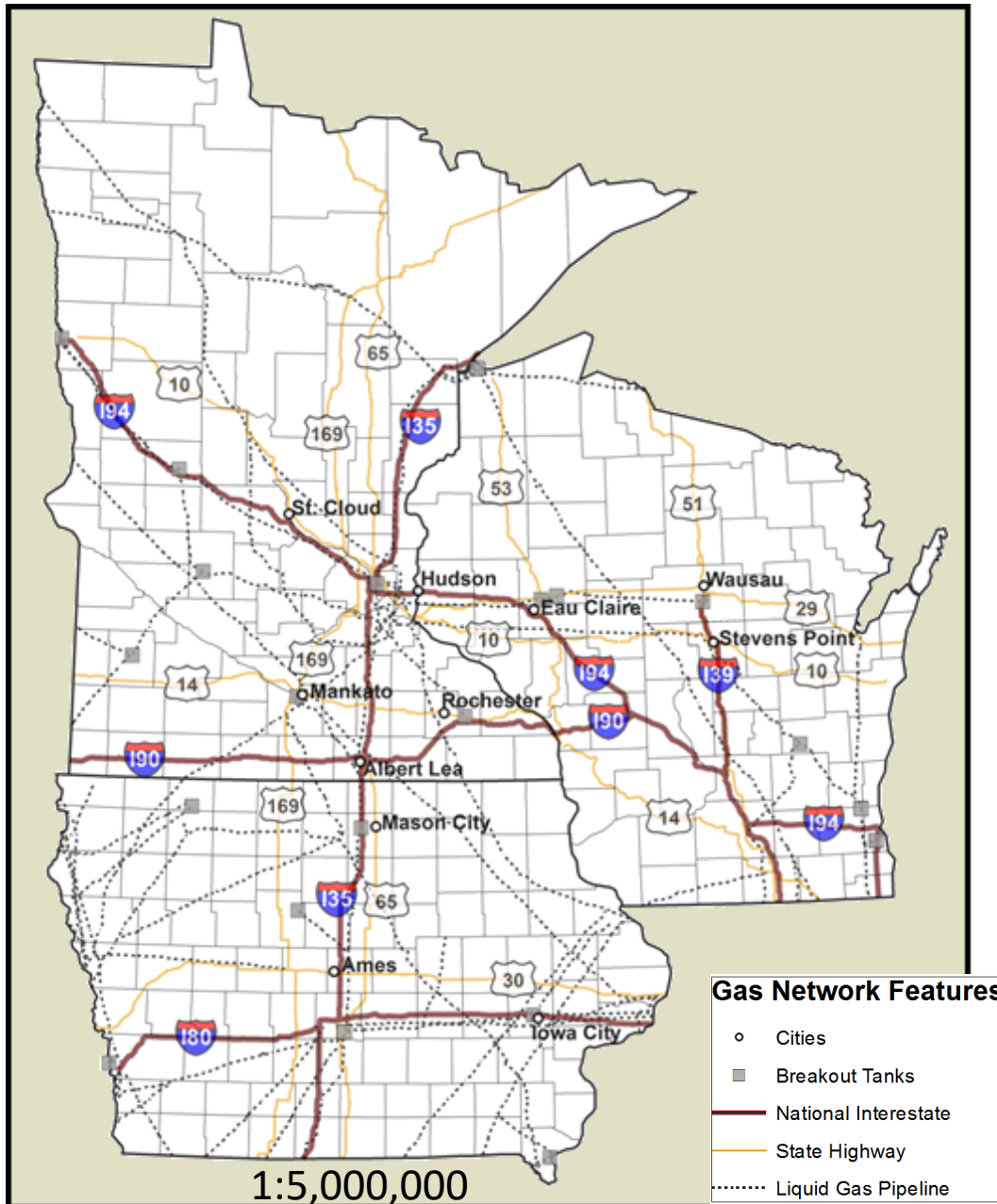
# Agenda

- Introduction
- Study Area
- Gas Taxes
- Wholesale/Retail Prices
- Unfair Sales Act
- Eau Claire Market Comparison
  - Further Analysis
- Summary Statements

# Study Area

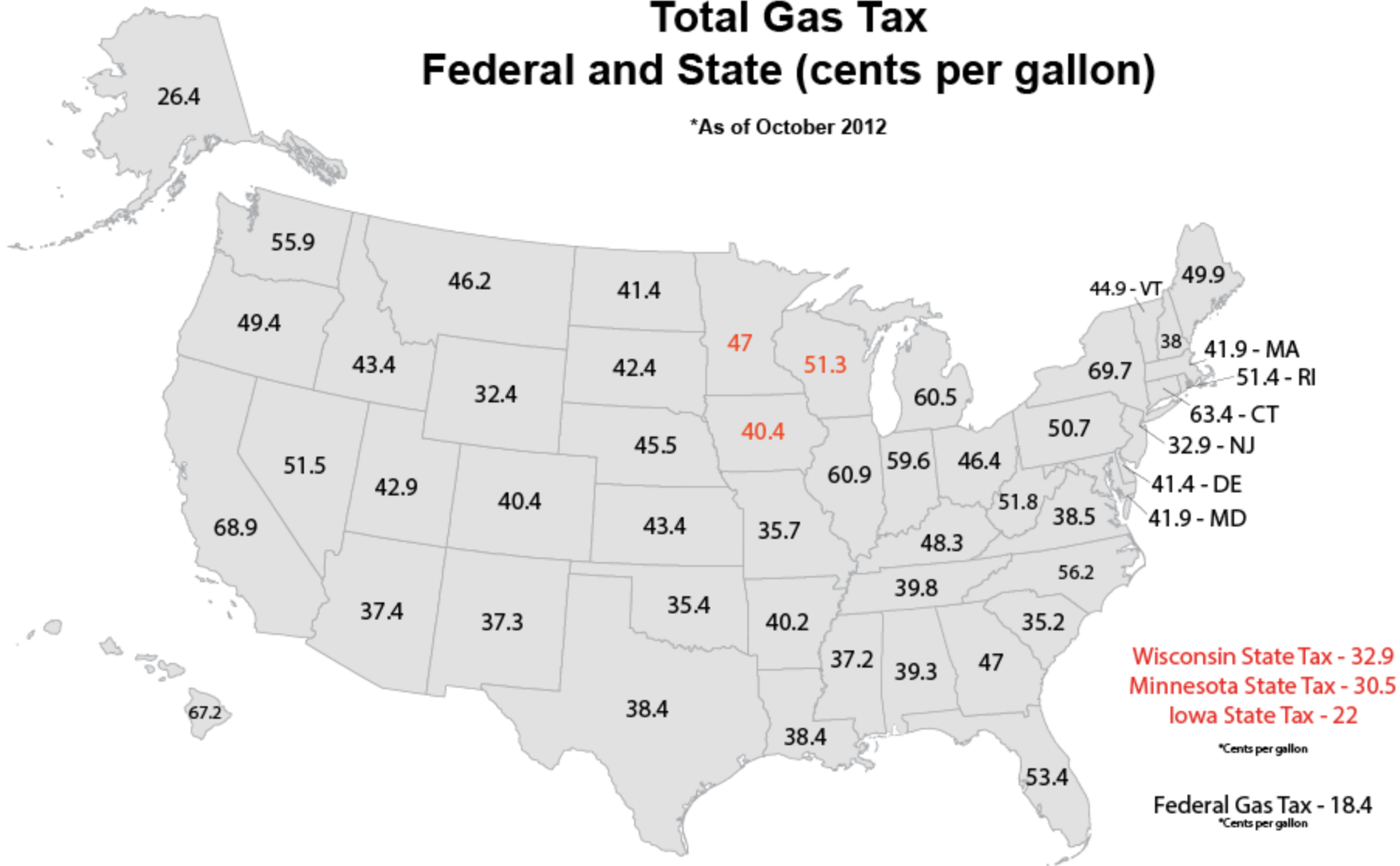
- 10 cities of somewhat similar population as well as located on major highways and/or interstates
- **Wisconsin:** Eau Claire, Hudson, Stevens Point, and Wausau
- **Minnesota:** Mankato, St. Cloud, and Albert Lea
- **Iowa:** Ames, Mason City, and Iowa City

# Area of Interest and Study Cities



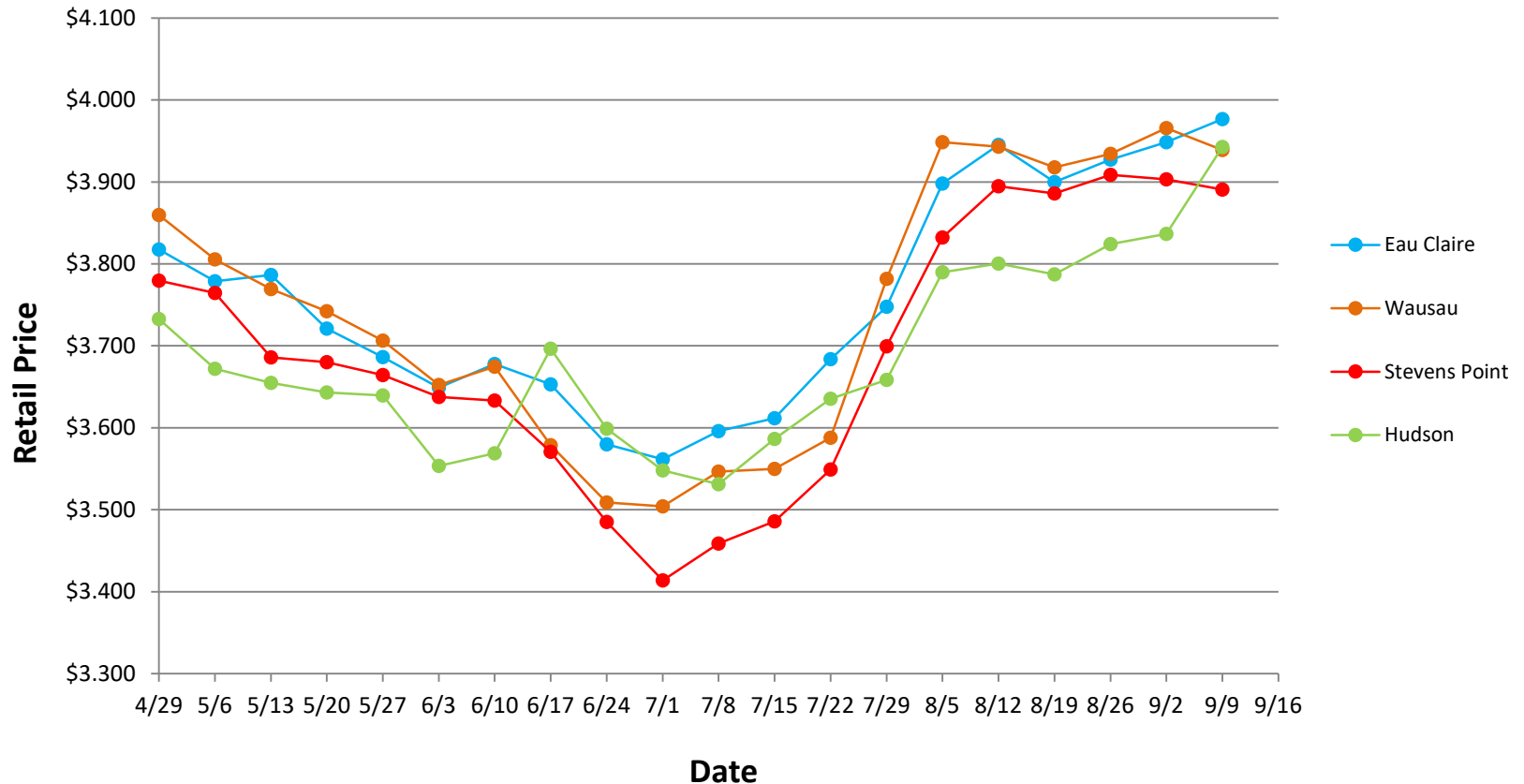
# Total Gas Tax Federal and State (cents per gallon)

\*As of October 2012



# **Retail Prices, Wholesale Prices, and the Unfair Sales Act**

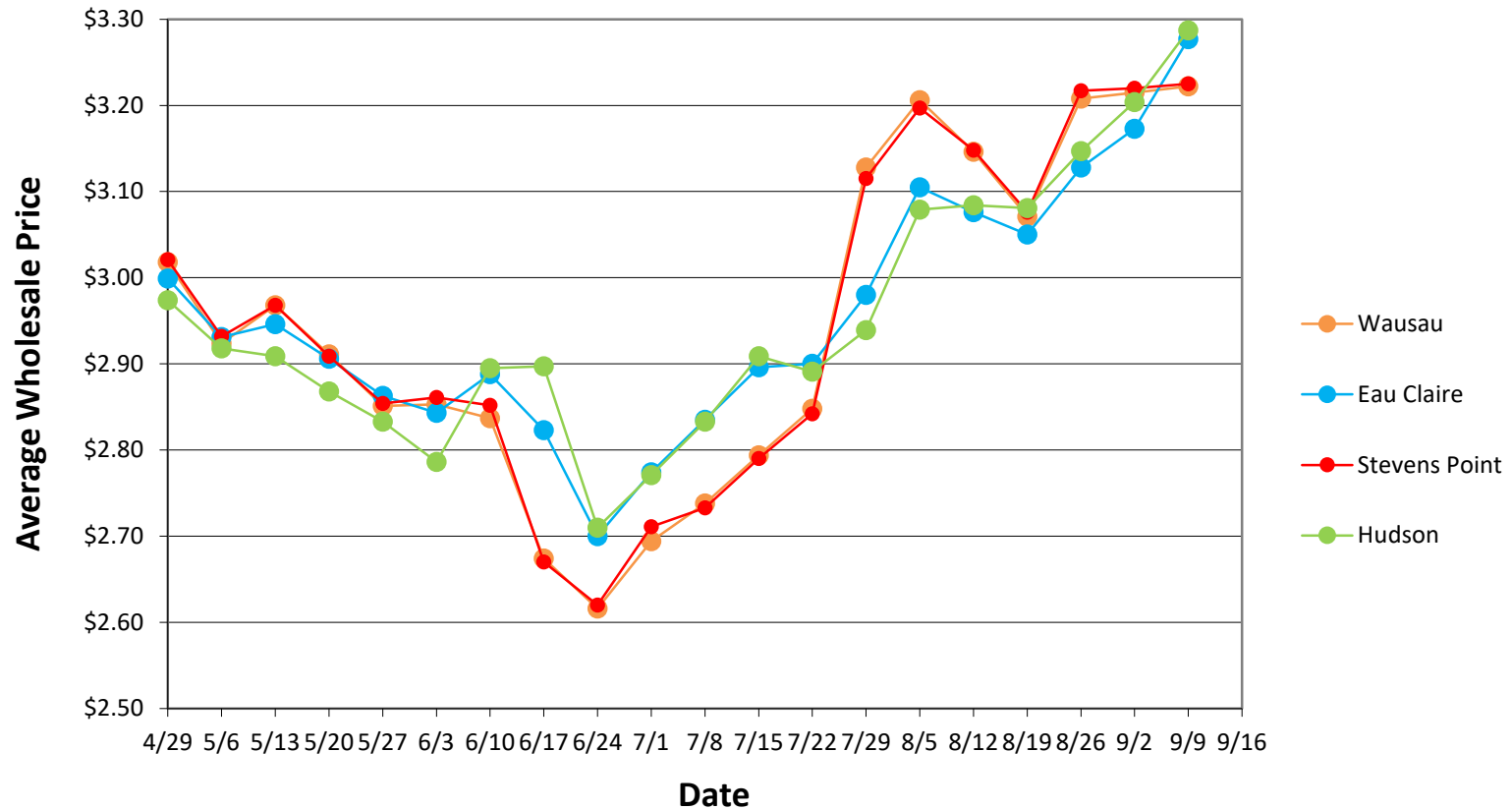
# Average Retail Prices by City



Claim: Retail prices in Eau Claire are generally higher than other Wisconsin cities



# Average Wholesale Price

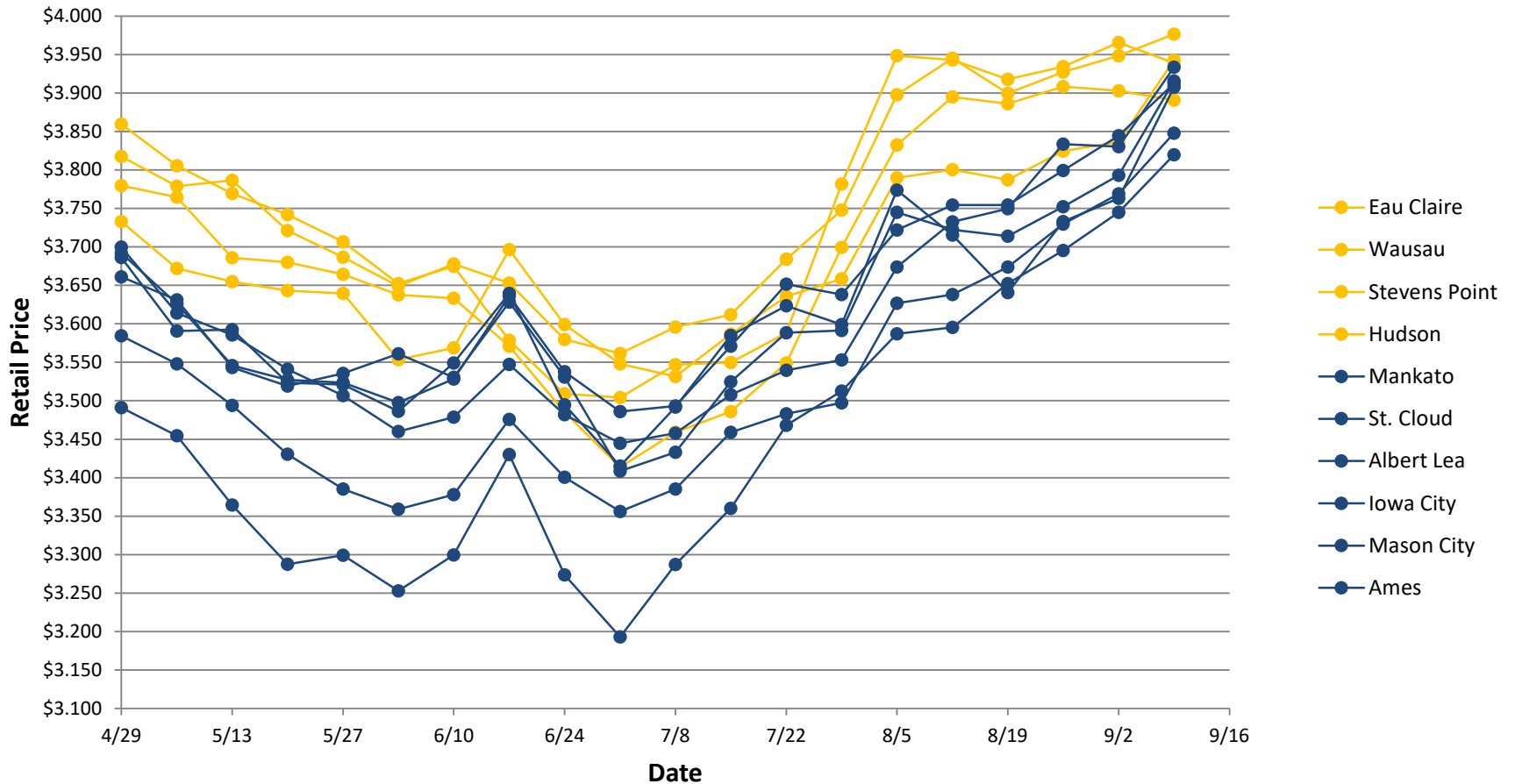


- One explanation is that the “cost” of gasoline is more expensive in Eau Claire
- According to the above graph, this is not an accurate statement
- Wholesale prices are fairly similar among these WI cities

# Observations

- We do observe generally higher retail prices in Eau Claire than in many cities throughout the state
- We **do not** observe a significant difference in either the wholesale or retail price between these sample cities

# Average Weekly Retail Price



However, we do observe higher retail prices in Wisconsin than in neighboring states

# Minimum Markup Law

Also known as the Unfair Sales Act

The Basic Idea:

- Motor fuel retailers and wholesalers are required to sell gasoline at a “minimum markup” above cost
- Cost refers to the wholesale price
- Markup 6% above certain costs or 9.18% over the average wholesale price, whichever is greater (Marley & Stein, 2010)

Enacted in Wisconsin in 1939

- Meant to cover overhead costs and protect smaller firms against predatory pricing
  - **Predatory Pricing** occurs when a firm sells its product below cost

# Minimum Markup Law (cont'd.)

- Penalties
  - First Offense: \$50 – 500 per day the law is violated
  - Second Offense: \$200 – 2500 per day
- Steep penalties give firms an incentive to set prices high enough to ensure that they do not fall below the “minimum markup”
- Federal Trade Commission in 2003 stated, “the Act likely leads to significantly higher prices for consumers . . . and harms competition.” (<http://www.ftc.gov/opa/2003/10/wigas.shtm>)
- Due to the Act, Wisconsin’s gasoline prices varied markedly less than in other states (Brannon 2000)

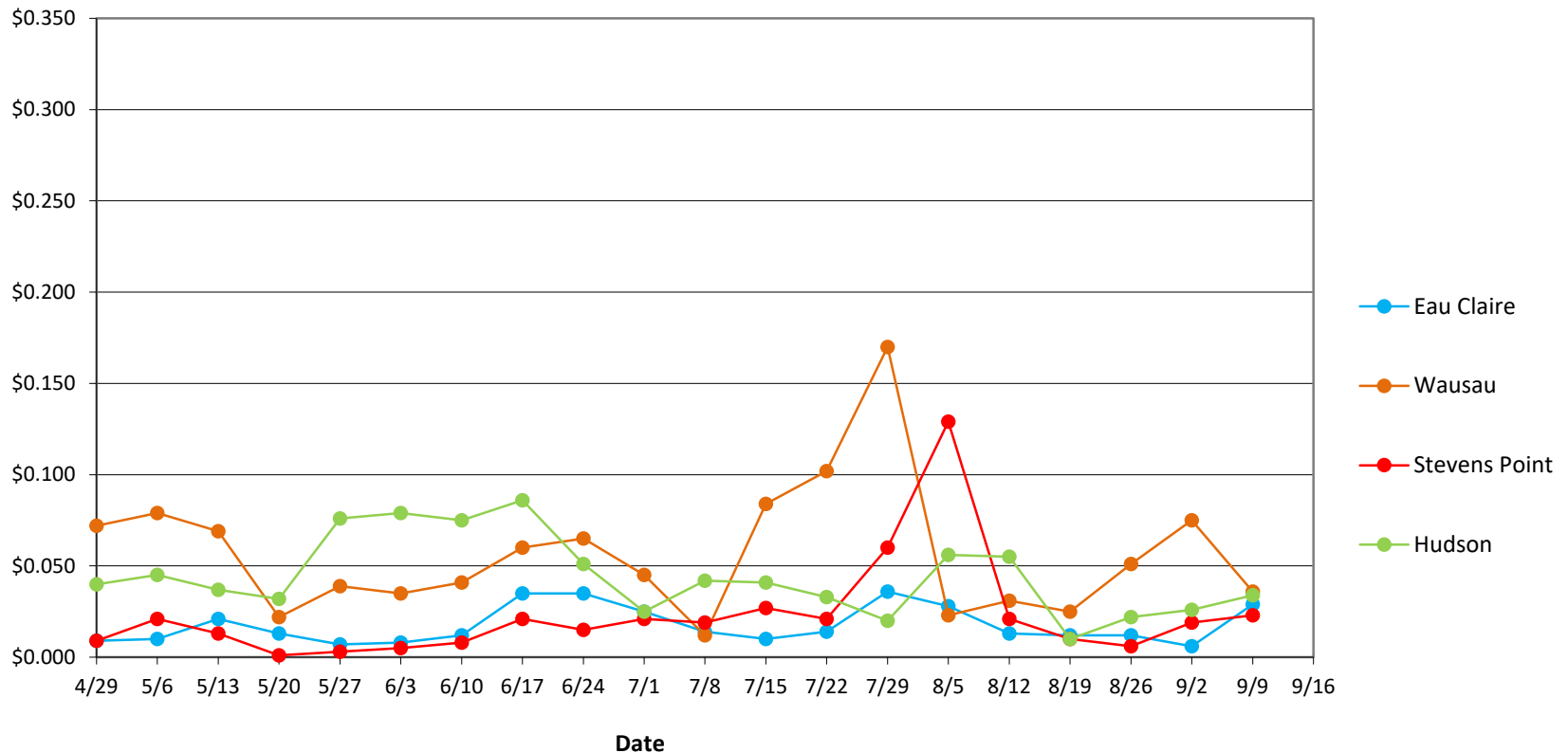
## Public Observation: Gas prices vary less between stations in Eau Claire than other cities

City	Average Variance
Eau Claire	\$0.017
Wausau	\$0.057
Stevens Point	\$0.022
Hudson	\$0.044
Mason City	\$0.219
Ames	\$0.153
Iowa City	\$0.124
Mankato	\$0.054
St. Cloud	\$0.130
Albert Lea	\$0.059

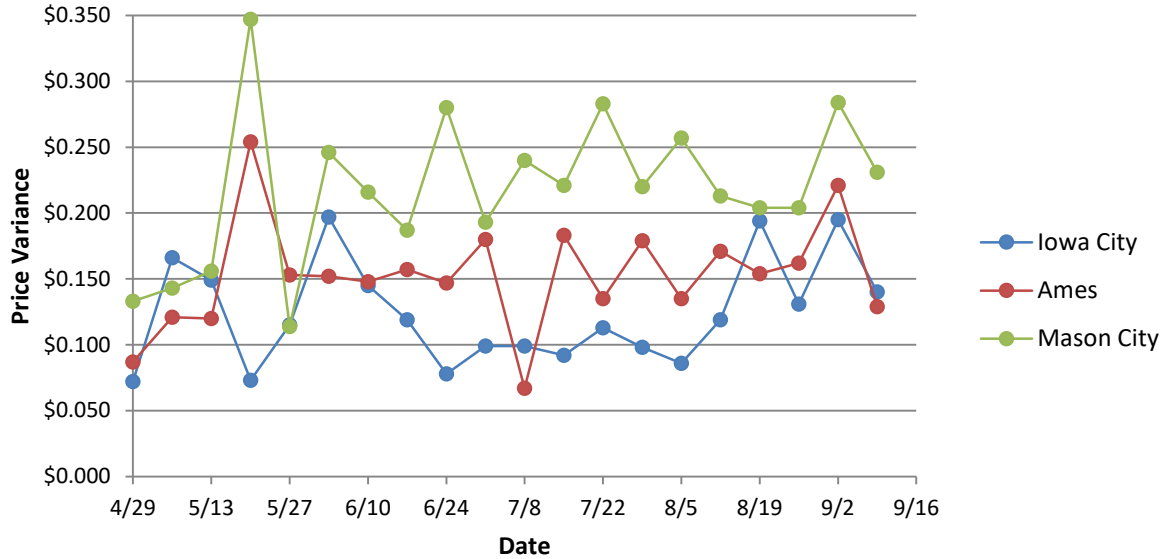
- Average variance over 20-week period
- Why is there significantly less variance in WI cities?
- WI's Minimum Markup Law may be the answer

- **Variance** = Maximum Price Recorded in a given week – Minimum Price Recorded for the same week
- Most variances in Wisconsin below 10 cents
- Specifically, **ALL** of Eau Claire's variances are **below 4 cents**

## Wisconsin Weekly Variances



**Iowa Weekly Variances**



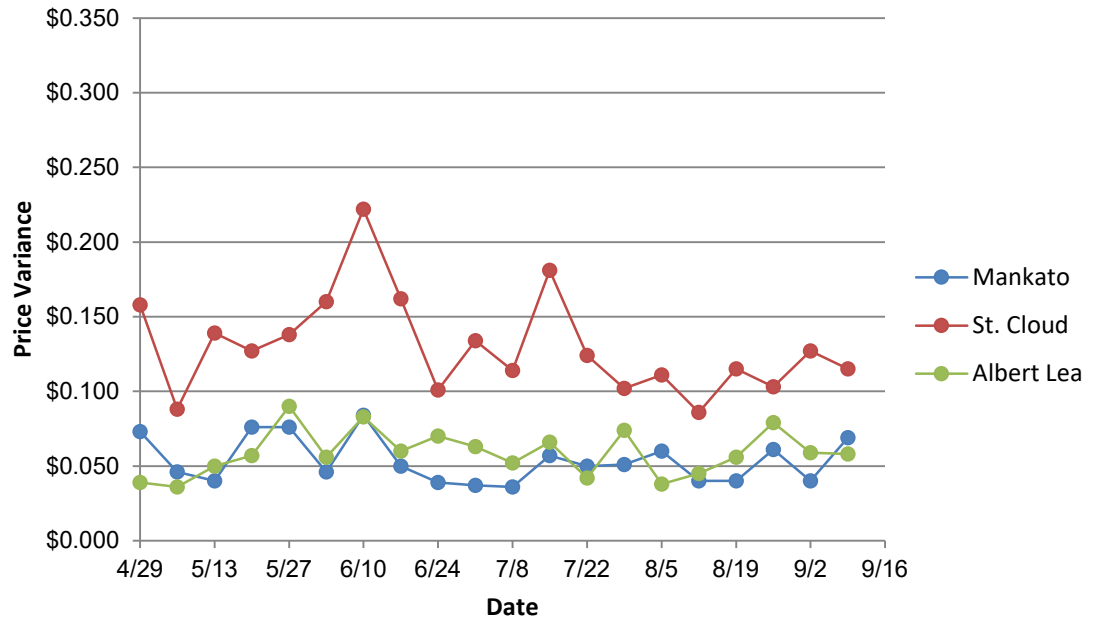
## Iowa

- **Wide range of variances**
- **More volatility of variances**

## Minnesota

- **lower overall variances**
- **less volatility in the variances**

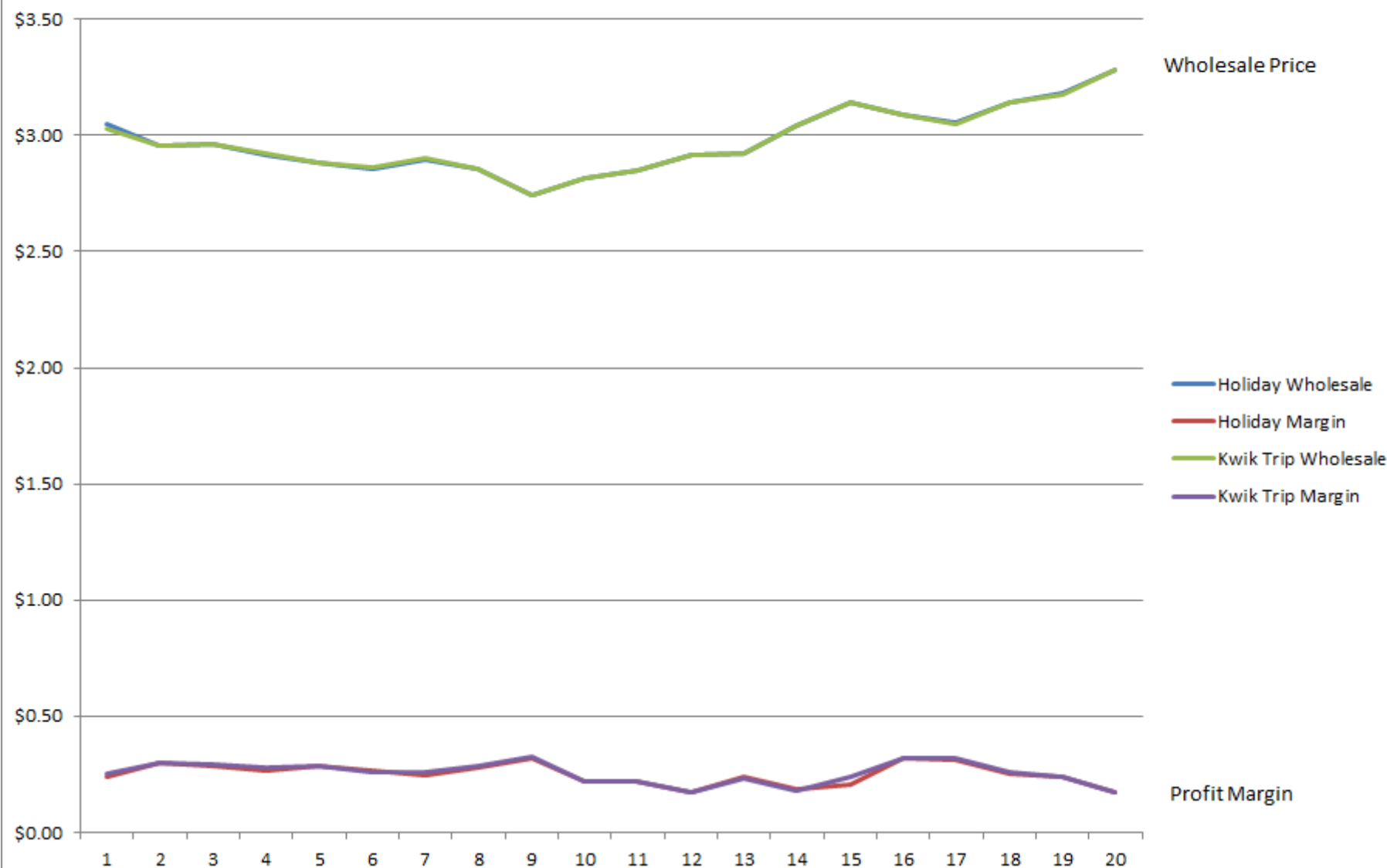
**Minnesota Weekly Variances**



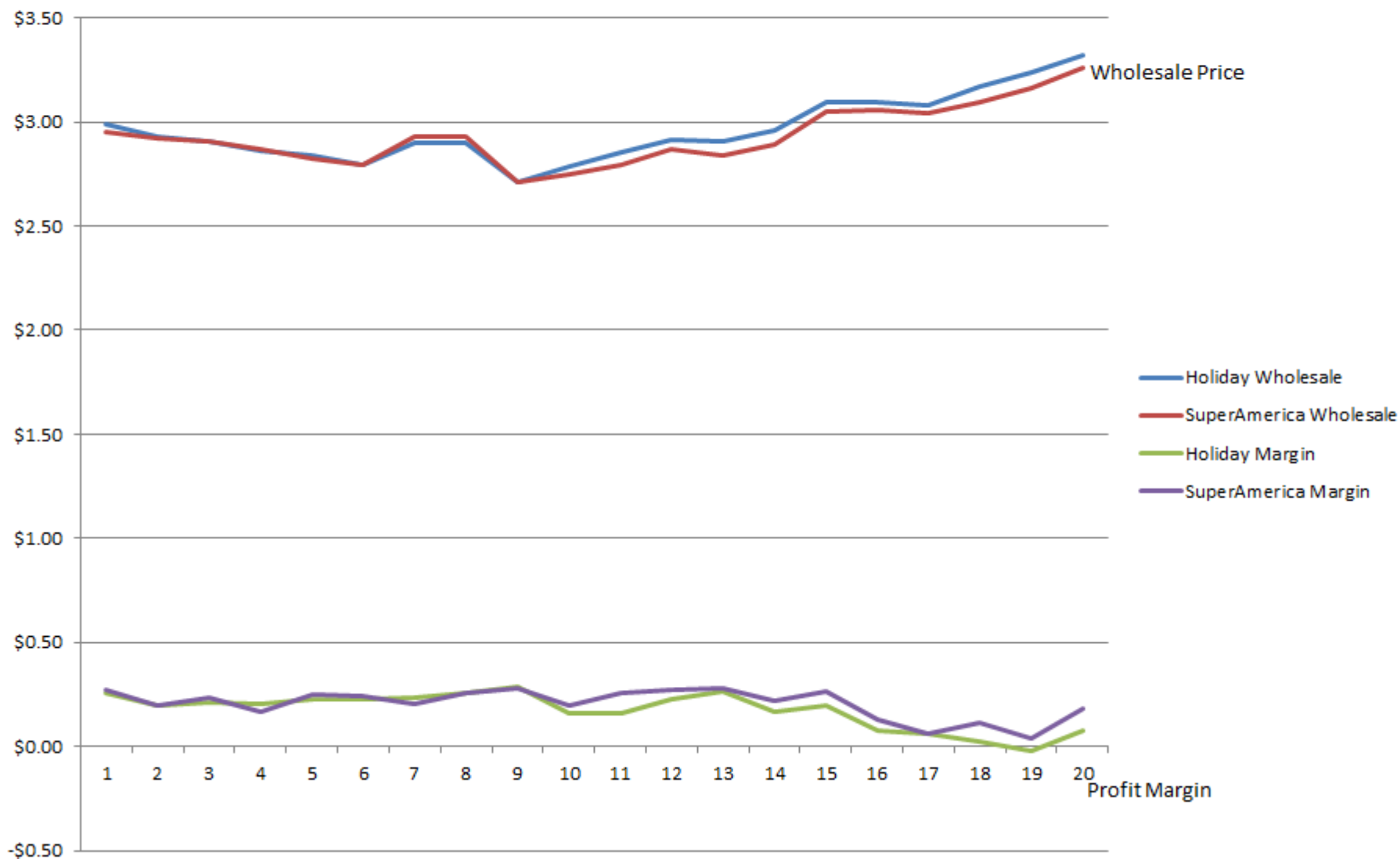


# Weekly Wholesale Prices and Profit Margins for Holiday and Kwik Trip for Eau Claire, WI

4/29/2012 - 9/9/2012

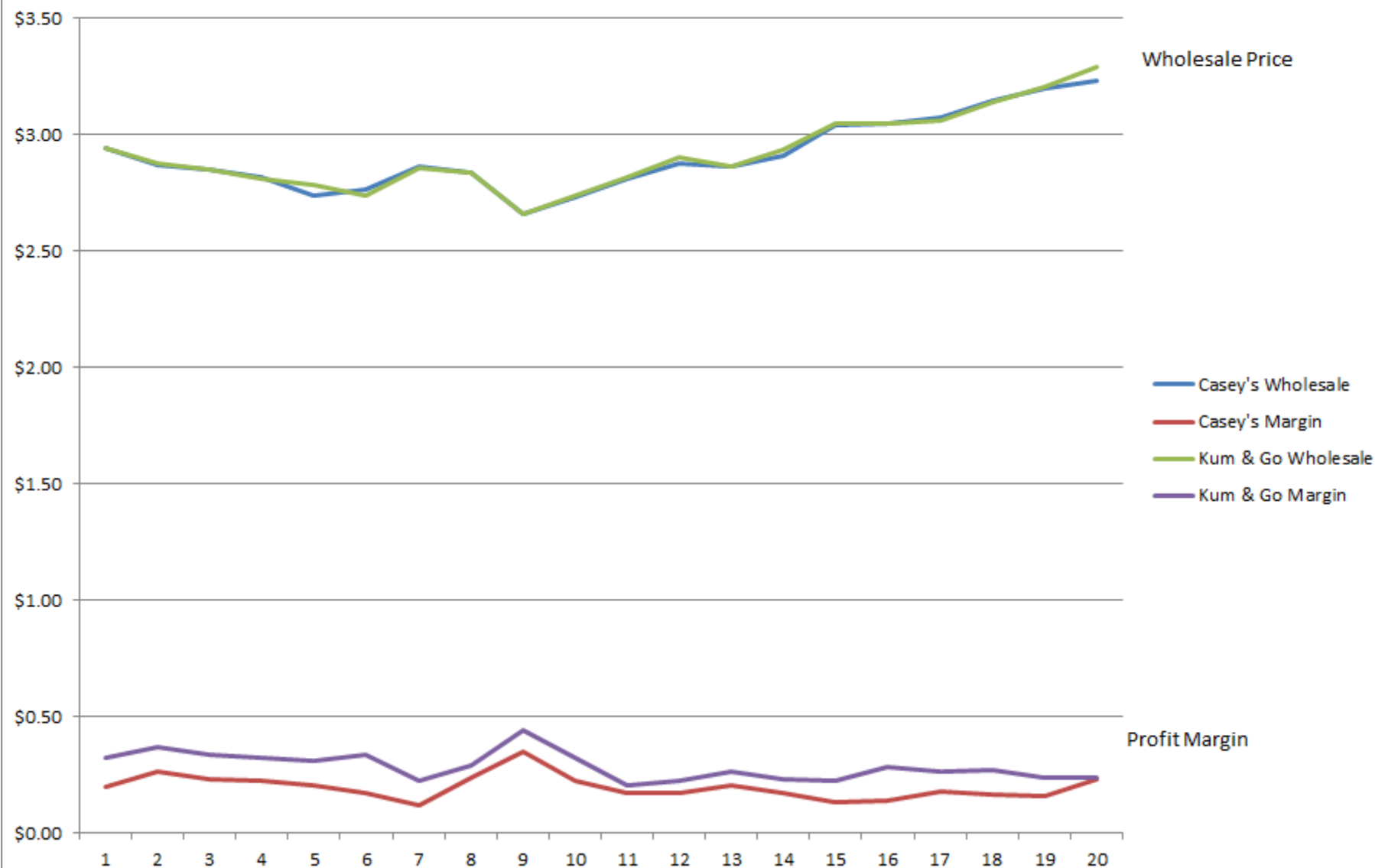


# Weekly Wholesale Prices and Profit Margins for Holiday and SuperAmerica for St. Cloud, MN 4/29/2012 - 9/9/2012



# Weekly Wholesale Prices and Price Margins for Casey's and Kum & Go for Ames, IA

4/29/2012 - 9/9/2012



# **Eau Claire Market Comparison**

# Questions

- How does the price dispersion of Eau Claire's gas market differ from other similar-sized Midwestern cities?
- What locational factors contribute to the reported pricing patterns in Eau Claire?
- Does Wisconsin's minimum markup law bring small businesses into the market, or does it simply inflate the cost of regular gas?

# Hypotheses

- The purportedly consistent pattern of low price dispersions likely associated with high seller density and disparate market share.
- Uniform prices likely associated with clustering of certain retail stations.
- Consumers within the study cities of Wisconsin do no benefit from Unfair Sales Act.



# Key Concepts

## Unfair Sales Act

- Every retailer must mark up the price of petrol by at least 6% a gallon over the wholesale price.
- Designed to help smaller, unbranded retailers by preventing predatory pricing.

## Price Dispersion

- The variation in prices across sellers of a particular good.
- Often attributed to search costs and localized competition.

## Search Costs

- One component of transaction costs. Theoretically, rational consumers will continue to search for a better price or product until the marginal cost of searching exceeds the marginal benefit of the search.
- Example: Driving around to look for cheap gas.

## Seller Density

- The number of retailers within a defined area. (1.5 mile radius)





# Magellan's Chippewa Falls Location



Image Source: "3909 N Prairie View Rd, Chippewa Falls." 37° 25' 19.1" N, 122° 05' 06" W. Google Earth. October 2, 2011. November 10, 2012.

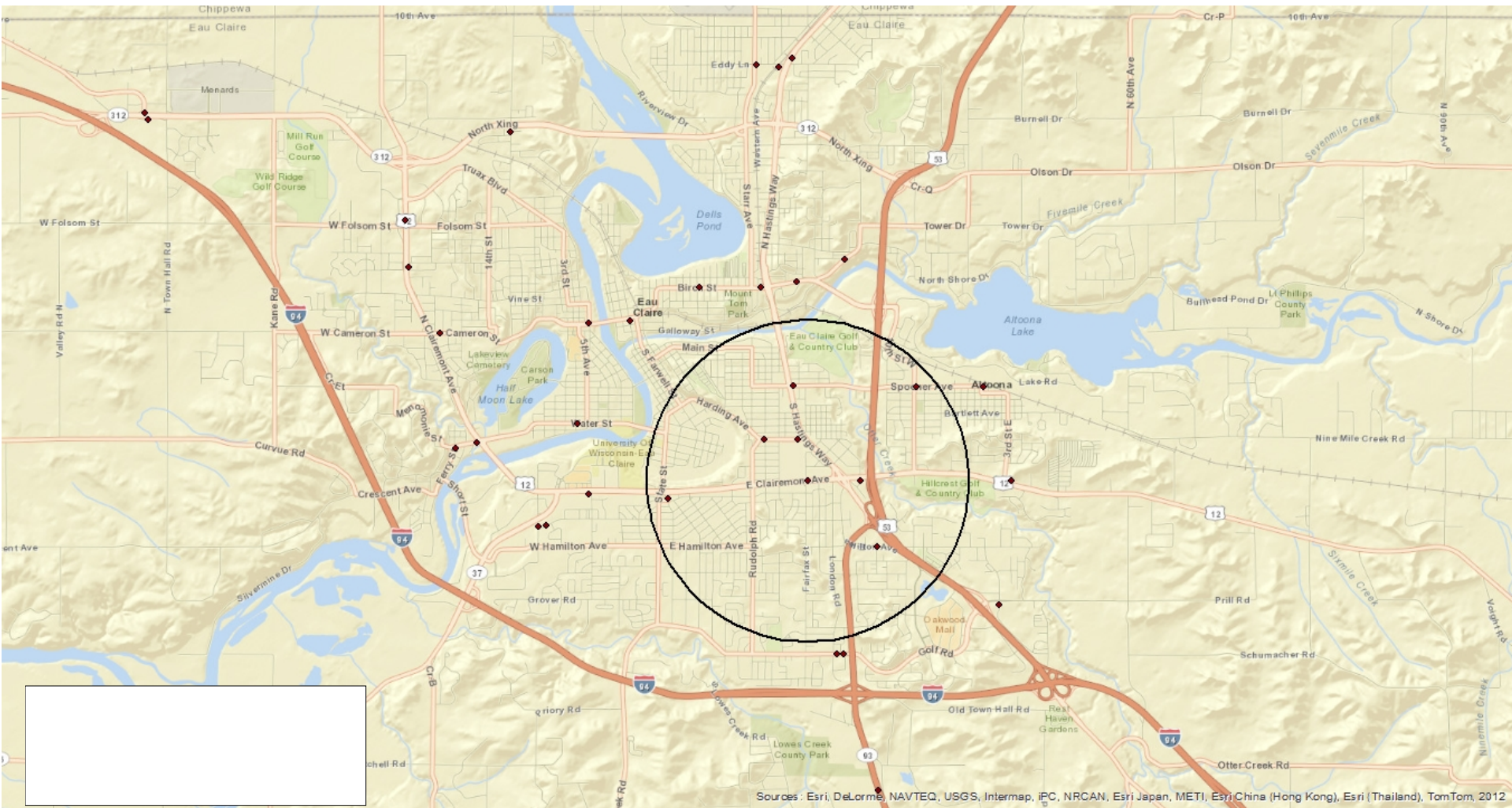
# Methodology: Pricing Data Collection

- Collection Period: October 11<sup>th</sup> – October 25<sup>th</sup>
- Data Acquisition of Retail Prices: MotorTrends, AAA Fuel Finder (Sorted by City)
- Data Acquisition of Wholesale Prices: Oil Pricing Information Service

Brand	Address	Regular	Plus	Premium	Diesel
Holiday	4304 Jeffers Rd Eau Claire, WI, 54703	 \$3.449 Lowest Price	 \$3.449 Lowest Price	N/A	 \$4.049 Lowest Price
Holiday	6123 Truax Ln Eau Claire, WI, 54703	\$3.449	N/A	N/A	\$4.099
Kwik Trip	108 W Madison St Eau Claire, WI, 54703	\$3.449	\$3.449	N/A	N/A
Kwik Trip	2327 N Clairemont Ave Eau Claire, WI, 54703	\$3.449	\$3.449	N/A	N/A
Kwik Trip	2135 Brackett Ave Eau Claire, WI, 54701	\$3.449	\$3.449	N/A	N/A
Kwik Trip	2715 Golf Rd Eau Claire, WI, 54701	\$3.449	\$3.449	N/A	N/A
Kwik Trip	900 McKinley Rd Eau Claire, WI, 54703	\$3.449	\$3.449	N/A	N/A
Holiday	5511 State Road 93 Eau Claire, WI, 54701	\$3.449	\$3.449	N/A	\$4.049
Holiday	2943 Western Ave Eau Claire, WI, 54703	\$3.449	\$3.449	 \$3.649 Lowest Price	\$4.049
Holiday	6126 Texaco Dr Eau Claire, WI, 54703	\$3.449	\$3.449	N/A	\$4.049



# Methodology: Seller Density and Distance from Highway



- Calculated Standard Deviation of Prices within the Dispersion Areas

# Herfindahl-Hirshman Index (HHI)

- Measures the size of firms in relation to the industry.
- Indicates the amount of competition and concentration within a market.
- Used by the Department of Justice

## Index

- If HHI under 0.01, then market is highly competitive and unconcentrated
- If HHI under 0.15, then unconcentrated
- If HHI between 0.15 and 0.25, then moderately concentrated
- If over 0.25, then highly concentrated and potentially non competitive
- As market concentration increases, the chances of collusion and monopolistic competition rises.

Formula:

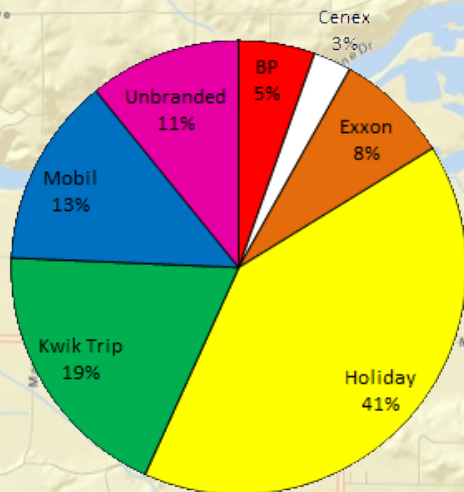
$$HHI = \sum_{i=1}^N S_i^2 \rightarrow (S_1)^2 + (S_2)^2 + (S_3)^2 + \dots$$

where S is equal to percent market share



# Eau Claire Gas Market

## Gas Market Composition: Eau Claire

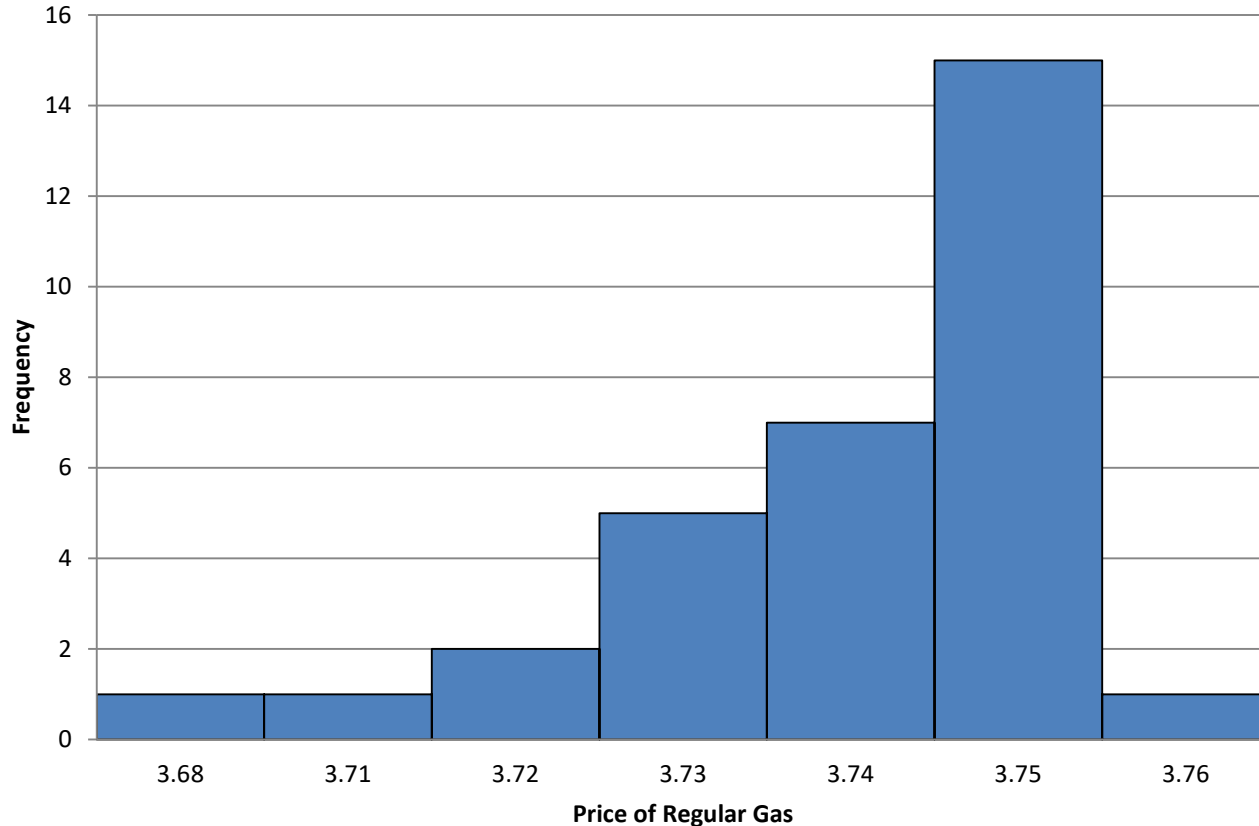


Herfindahl-Hirschman Index: 0.240

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

# Eau Claire Gas Market (Continued)

Price Distribution: Eau Claire



**Herfindahl-Hirschman Index: 0.240**

**Standard Deviation of Gas Prices: 1.6¢**

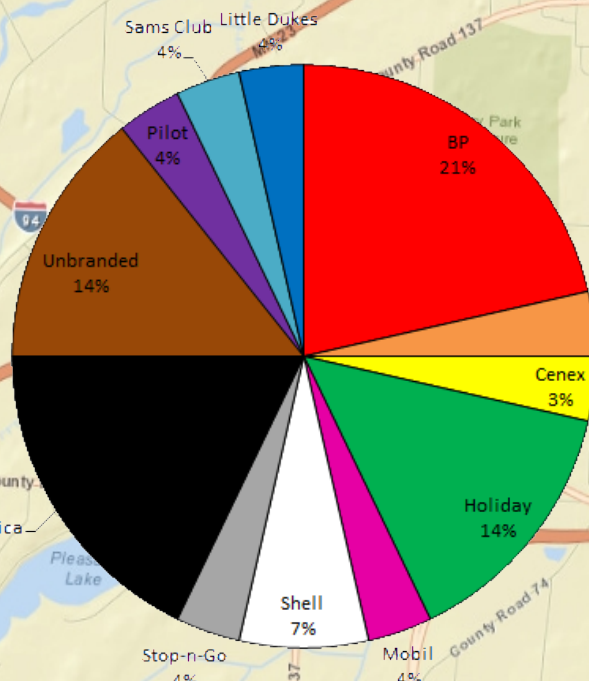
**Average Distance from Transport: 0.11 Miles**

**Average Seller Density: 1.91**



# St. Cloud Gas Market

Gas Market Composition: St. Cloud

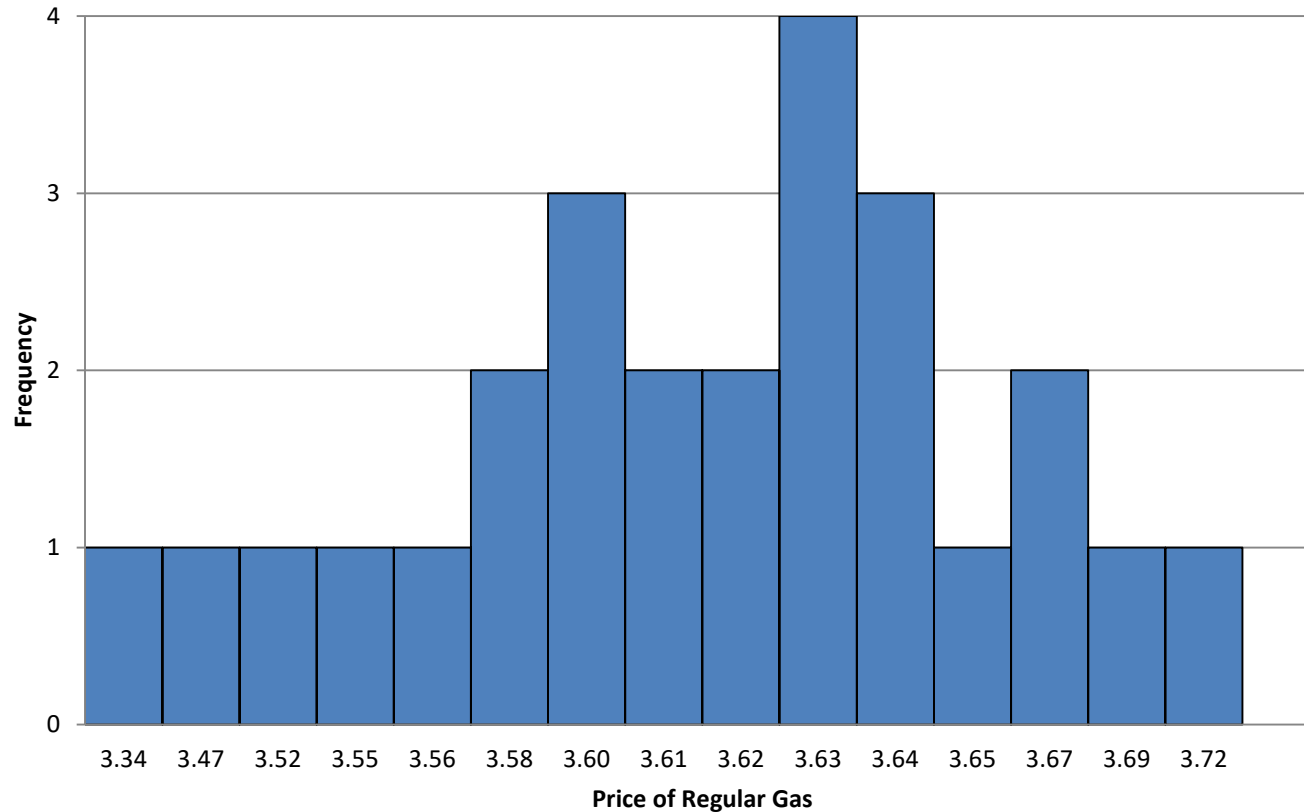


Herfindahl-Hirshman Index: 0.133

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

# St. Cloud Gas Market (Continued)

Price Distribution: St. Cloud



**Herfindahl-Hirschman Index: 0.133**

**Standard Deviation of Gas Prices: 7.5¢**

**Average Distance from Transport: 0.27 Miles**

**Average Seller Density: 6.43**

# Study Markets: An Overview

City	Seller Density	Highway Distance	HHI	Standard Deviation (Cents)	Average Price (Dollars)
Eau Claire	1.91	0.11	0.240	1.60	3.74
Wausau	2.23	0.12	0.139	1.80	3.78
Stevens Point	2.38	0.04	0.195	1.50	3.72
Hudson	3.33	0.11	0.163	3.70	3.70
St. Cloud	6.43	0.27	0.133	7.50	3.60
Mankato	3.25	0.10	0.146	5.30	3.71
Albert Lea	3.57	0.09	0.172	2.90	3.62
*Mason City	3.13	0.12	0.253	5.00	3.52
Ames	4.78	0.35	0.143	5.80	3.66
Iowa City	5.97	0.27	0.171	9.70	3.75

# Linear Regression: Seller Density and Price Dispersion

CITY	R-Square	Std. Error	Constant	Coefficient	Significance
Eau Claire	.050	.005	.006	.000	.246
Wausau	0.618	0.005	.000	.002	.000
Stevens Point	.438	.004	.004	.001	.005
Hudson	.916	.006	-.003	.005	.000
St. Cloud	.435	.031	.008	.004	.000
Mankato	.644	.013	.002	.006	.000
Albert Lea	.546	.008	-.005	.004	.003
Ames	.684	.011	.100	.005	.056
Iowa City	.840	.179	-.006	.008	.000

Independent Variable: Seller Density

Dependent Variable: Price Dispersion



# OPIS Findings

City	Average Whole Sale Price	Average Retail Price
Eau Claire	2.95	3.76
Wausau	2.95	3.75
Stevens Point	2.95	3.69
Hudson	2.95	3.69
St. Cloud	2.95	3.62
Mankato	2.95	3.68
Albert Lea	2.95	3.68
Mason City	2.95	3.65
Ames	2.91	3.53
Iowa City	2.93	3.61

Averages Reflect Data Gathered From 4/29 - 9/9

# **Summary Statements**

# Summary

- Implications of Wisconsin's Unfair Sales Act ("Minimum Markup Law")
  - Retail gas prices, on average, are higher in WI cities vs. comparable cities located in IA, MN
    - Consistent with past studies and reports
  - Penalty structure provides incentive for local retailers to charge similar prices
    - Little to no variation in retail gas prices not unique to Eau Claire; observed in other WI cities
  - The law alone, however, is not sufficient for explaining why retail gas prices in Eau Claire are higher vs. other WI city

# Summary

- Level of competition among local gas retailers
  - A lower level of competition translates into greater “market power” for firms
    - In other words, a firm has the ability to raise prices without losing all sales.
    - Market analysis reveals low to moderate amount of competition, low level of seller density in Eau Claire
      - Greater ability of gas retailers to charge a markup higher than minimum specified by state law

# Summary

- If local market is characterized by a few relatively large firms, then firms' pricing decisions are *interdependent*
  - Common to observe similar prices charged by firms in this scenario
    - Doesn't necessarily require explicit communication among firms
      - 2011 investigation by Department of Justice revealed no indication of explicit price fixing, illegal activity by Eau Claire gas retailers

# Sources and Thanks

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